3. The apparatus of claim 1, wherein the triangular patches are obtained by dividing the respective grids in the direction from a top right vertex to a bottom left vertex.

4. The apparatus of claim 1, wherein the triangular patches are right-angled triangles.

5. The apparatus of claim 1, wherein if 3 of the triangular patches of the lower hierarchical level are arranged adjacent to the triangular patches of the upper hierarchical level, vertices of unit triangular patches existing within the triangular patches of the lower hierarchical level are connected such that the triangular patches of the upper hierarchical level have the same unit triangular patch structure as that of the triangular patches of the lower hierarchical level.

6. The apparatus of claim 1, wherein if 2 of the triangular patches of the lower hierarchical level are arranged adjacent to the triangular patches of the upper hierarchical level, vertices of unit triangular patches included in the triangular patches of the lower hierarchical level disposed in the boundaries between the triangular patches of the lower hierarchical level and the triangular patches of the upper hierarchical level are consecutively connected with each other in a zigzag pattern.

7. The apparatus of claim 1, wherein if 1 of the triangular patches of the lower hierarchical level is arranged adjacent to the triangular patches of the upper hierarchical level, vertices of unit triangular patches included in the triangular patches of the lower hierarchical level disposed in the boundary between the triangular patches of the lower hierarchical level and the triangular patches of the upper hierarchical level are connected with vertices of the triangular patches included in the lower hierarchical level facing the boundary line in apposite direction.

8. The apparatus of claim 1, wherein the patch configuration unit transmits information on indices of vertices of the triangular patches to the LOD determination unit or the patch connection unit, and the LOD determination unit or the patch connection unit determines the information on the height of the target image using the information on the indices.

9. A method for representing a three-dimensional image with a multi-level LOD (level of detail), comprising the steps of:

configuring a multi-level LOD hierarchical mesh for each hierarchical level with a different LOD level by arranging triangular patches of a upper hierarchical level (level m+1, lower resolution) to have approximately k×k of triangular patches of an lower hierarchical level (level m, higher resolution), where k is the number of horizontal and vertical grids of the lower hierarchical level;

sampling information on height of a target image on a regular basis and allocating the sampled height information to each vertex of the triangular patches included in the multi-level LOD hierarchical mesh;

determining an LOD of each triangular patch according to a view point of a virtual camera; and

connecting the adjacent triangular patches with each other without gaps when the adjacent triangular patches among the triangular patches of the multi-level LOD hierarchical mesh have different LOD levels.

10. The method of claim 9, wherein at the step of configuring the multi-level LOD hierarchical mesh, the LOD level of the lower hierarchical level is higher than that of the lower hierarchical level.

11. The method of claim 9, wherein the triangular patches are obtained by dividing the respective grids in the direction from a top right vertex to a bottom left vertex.

12. The method of claim 9, wherein the triangular patches are right-angled triangles.

13. The method of claim 9, wherein at the step of connecting the adjacent triangular patches without gaps, if 3 of the triangular patches of the lower hierarchical level are arranged adjacent to the triangular patches of the upper hierarchical level, vertices of unit triangular patches existing within the triangular patches of the lower hierarchical level are connected such that the triangular patches of the upper hierarchical level have the same unit triangular patch structure as that of the triangular patches of the lower hierarchical level.

14. The method of claim 9, wherein at the step of connecting the adjacent triangular patches without gaps, if 2 of the triangular patches of the lower hierarchical level are arranged adjacent to the triangular patches of the upper hierarchical level, vertices of unit triangular patches included in the triangular patches of the lower hierarchical level disposed in the boundaries between the triangular patches of the lower hierarchical level and the triangular patches of the upper hierarchical level are consecutively connected with each other in a zigzag pattern.

15. The method of claim 9, wherein at the step of connecting the adjacent triangular patches without gaps, if 1 of the triangular patches of the lower hierarchical level is arranged adjacent to the triangular patches of the upper hierarchical level, vertices of unit triangular patches included in the triangular patches of the lower hierarchical level disposed in the boundary between the triangular patches of the lower hierarchical level and the triangular patches of the upper hierarchical level are connected with vertices of the triangular patches included in the lower hierarchical level facing the boundary line in apposite direction.

* * * * *